REMARKS

Status of Claims

The Office Action, mailed August 17, 2007, has been reviewed and the comments of the Patent and Trademark Office have been considered. Claims 1-70 were pending in the application. Claims 1, 2, 9, 12, 26, 27, 34, 37, and 52 are amended and claims 8 and 32 are cancelled. The amendments to claims 15 and 40 correct typographical issues that in no way affect the scope or patentability of the claims. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, are presented, with an appropriate defined status identifier. Therefore, claims 1-7, 9-31 and 33-70 are pending in the application.

Prior Art Rejections

Claims 1-9, 11-16, 20-23, 26-34, 36-41, 45-48, 52-60 and 64-67 were rejected under 35 U.S.C. § 103(a) as being unpatentable over King et al. (hereinafter "King") in view of Maanoja et al. (hereinafter "Maanoja") and further in view of Carlsson et al. (hereinafter "Carlsson"). Claims 10 and 35 were rejected under 35 U.S.C. § 103(a) as being unpatentable over King in view of Maanoja and Carlsson further in view of Willars et al. (hereinafter "Willars"). Claims 11-12 and 36-37 were rejected under 35 U.S.C. § 103(a) as being unpatentable over King in view of Maanoja and Carlsson further in view of Varonen et al. (hereinafter "Varonen"). Claims 17, 24, 42, 61 and 68 were rejected under 35 U.S.C. § 103 (a) as being unpatentable over King in view of Maanoja and Carlsson further in view of Kondou et al. (hereinafter "Kondou"). Claims 18-19, 25, 43-44, 50-51, 62-63 and 69-70 were rejected under 35 U.S.C. § 103(a) as being unpatentable over King in view of Maanoja and Carlsson further in view of Mizugaki (hereinafter "Mizugaki"). Applicants respectfully traverse these rejections for at least the following reasons.

The currently amended claim 1, for example, recites the following features of a location system:

a)   a mobile terminal capable of performing a plurality of positioning methods, said mobile terminal transmitting a registration message containing selectability information indicating whether the mobile terminal is capable of selecting said positioning methods;

b)   a client terminal that transmits a location request message for requesting location information of said mobile terminal, said location information having requested accuracy;

c)   a plurality of wireless nodes for establishing a wireless link to said mobile terminal; and

d)   a controlling node connected to said wireless nodes for receiving said registration message from said mobile terminal, storing said selectability information, and receiving said location request message from said client terminal and examining said stored selectability information.

wherein said controlling node transmits a control message that specifies said requested accuracy of location information to the mobile terminal if the examined selectability information indicates that the mobile terminal is capable of selecting said positioning methods,

wherein said mobile terminal is responsive to said control message by selecting one of said positioning methods that satisfies the specified accuracy of said control message, performs the selected positioning method to produce measurement data, and transmits the measurement data to said controlling node

As amended claim 1 recites the new added feature that "the mobile node transmits a registration message containing selectability information indicating whether the mobile terminal is capable of selecting said positioning methods". This feature is followed by the controlling node receiving the registration message, storing the selectability information and

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examining it when the controlling node receives a location request message from a requesting client terminal that requests location information of a target mobile terminal and specifies accuracy of the location information. If the selectability information of the target mobile terminal indicates that it is capable of selecting positioning methods, the controlling node transmits a control message that specifies the requested accuracy of location information to that mobile terminal. The mobile terminal performs a selection process to determine one of the positioning method that satisfies the specified accuracy of location information specified in the control message to produce measurement data, which is then transmitted to the controlling node.

As described in the introductory part of the specification, all traffic to and from mobile terminals is concentrated on the RNC (radio network controller, or controlling node) and the selection of a positioning method is a complex, time-consuming process. Therefore, the processing burden is significant when the network is under heavy traffic load. The present invention is intended to save the RNC from the processing burden of selecting a positioning method from among a number of such methods for location information by shifting it to the mobile terminal if the controlling node determines from the stored selectability information that the target mobile terminal is capable of performing the method selection process.

As amended, claim 2 recites further features of the location system as follows:

e)   said registration message further contains capability information that designates positioning methods supported by the mobile terminal, and

f)   said controlling node is arranged to transmit said control message as a first control message to said mobile terminal if the selectability information indicates that said mobile terminal is capable of selecting said positioning methods;

g)   store said capability information of the registration message;

h)   examine the stored capability information and the stored selectability information in response to receipt of said location request message from said client terminal;

i)   select one of said positioning methods designated by said capability information that satisfies said requested accuracy if the examined selectability information indicates that the mobile terminal is not capable of selecting said positioning methods; and

j)   transmit a second control message to said mobile terminal said second control message specifying the selected positioning method, and

k)   said mobile terminal is responsive to said second control message for performing one of said positioning methods that is specified in the second control message to produce measurement data and transmits the measurement data to said controlling node.

If the stored selectability information of the target mobile terminal indicates that the mobile terminal is not capable of selecting positioning methods, the controlling node is responsible for selecting one of the positioning methods designated by the capability information so that the selected method satisfies the requested accuracy and transmits a second control message that specifies the selected positioning method to the mobile terminal. In response, the mobile terminal performs the positioning method specified in the second control message to produce measurement data, which is then transmitted to the controlling node.

King discloses a location system which is intended to reduce the size of assistance data supplied from the target mobile terminal in the UE-based A-GPS measurement mode. The target mobile terminal performs location calculation to supply the assistance data to the radio network controller (RNC). However, no registration is made in the RNC upon request from the mobile terminal to register its selectability information. Thus, the RNC is responsible for selecting a positioning method. Hence, the mobile terminal performs no method selecting process, as correctly pointed out by the Examiner.

In Maanoja, the mobile terminal is provided with data store 603, Fig. 6, that stores various location calculating methods which are usable to calculate its location. The serving mobile location center (SMLC) 113 receives location request signal 800 or 801 (Fig. 8), the SMLC selects the most suitable location calculating method. Depending on the method selected, the SMLC may request additional measurement information from the mobile station which information is required to enable the location to be calculated (column 10, lines 33-38). Applicants respectfully disagrees with the assertion in the Office Action that Maanoja teaches location services wherein a plurality of location calculating methods are used (abstract) and dynamically selected in either the mobile station or at the network side. There is nothing at all in the Maanoja patent that describes a "mobile station selecting a suitable positioning method that satisfies the requested accuracy of location information." Further, the data supplied from the mobile station is supplemental data for the SMLC to complete the measurement calculation.

Carlsson fails to remedy the deficiencies of King and Maaroja. In pertinent part, Carlsson states as follows:

"As discussed above, location service messages flow between the mobile station 80 and the SMLC 38. These location service messages may aid the mobile station 80 in determining its position, aid the mobile terminal in taking position related measurements, and/or aid the SMLC 38 in estimating the position of the mobile station 80, depending on the location measurement approach taken." (4:24-30)

"If the mobile station 80 supports any mobile station-based or mobile station-assisted positioning methods, the mobile station 80 may also provide the SGSN 32 with an indication of which positioning methods it supports during the attach procedure." (7:15-19)

"The mobile station 80 receives the location service message and responds thereto. In this simple example, the mobile station 80 performs the necessary position-related measurements (e.g., E-OTD measurements or GPS measurements) known in the art, and prepares an uplink location service message containing the measurement results and/or a mobile station-computed location estimate." (8:7-14)

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However, there is nothing in Carlsson et al. that describes or suggests the mobile station 80 performing the process of selecting a suitable positioning method. It is only the SMLC that is responsible for selecting the positioning method that is indicated by the mobile station during the attach procedure.

Consequently, it is clear that none of the cited references recognizes the importance of the process of selecting a suitable positioning method from a number of available methods. The present invention overcomes this problem by storing mobile's selectability information in the controlling node or network side and having the mobile terminal select one of its positioning methods that satisfies the requested accuracy of location information if the stored information indicates that the mobile terminal is capable of selecting positioning methods. These features, as claimed in the amended claims 1 and 26, are not suggested by the cited references, either singly or in combination, and are thus deemed to be unobvious over the cited prior art. The features recited in the amended independent claim 52, which is drawn to a mobile terminal, are also believed to be unobvious over the cited prior art.

The dependent claims are also patentable for at least the same reasons as the independent claims on which they ultimately depend. In addition, they recite additional patentable features when considered as a whole. As mentioned above, Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

Willars, Varonen, Kondou and Mizugaki have been relied on to teach other features of the dependent claims. However, as pointed out in previous Amendments, none of these references teaches the features of the independent claims that King, Maanoja and Carlsson fail to teach. Thus, if these rejections are maintained, the Examiner is respectfully requested to point out where these features are found in any of the cited prior art.
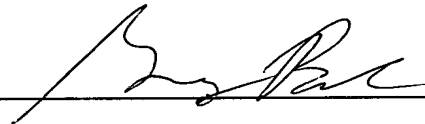
Conclusion

In view of the foregoing amendments and remarks, Applicant believes that the application is now in condition for allowance. An indication of the same is respectfully

requested. If there are any questions regarding the application, the examiner is invited to contact the undersigned attorney at the local telephone number below.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. § 1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date 12/17/2007   By _____

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